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PATENT APPLICATION
TRANSMITTAL

(Only for new nonprovisional applications under 37 CFR 1 53(b))

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First Named Inventor:	Craig William Payne, et al.
Title:	Heuristicallly Assisted User Interface For A Wireless Communication Device
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Dag Johansen

APPLICATION ELEMENTS
See MPEP chapter 600 concerning utility patent application contents

ADDRESS TO: Assistant Commissioner for Patents
Box Patent Application
Washington, DC 20231

1. [X] Fee Transmittal Form
(Submit an original, and a duplicate for fee processing)

2. [X] Specification -- Total Pages [35] --
Including
- Title page
- Background of the Invention
- Brief Summary of the Invention
- Brief Description of the Drawings
- Detailed Description
- Claim(s)
- Abstract of the Disclosure

3. [X] Drawing(s) *(35 USC 113)* -- Total Sheets [11] --

4. [X] 2 separate Declarations *(signed)* - Total Pages [5 pages each]

   a. [X] Newly executed (original or copy)

   b. [ ] Copy from a prior application (37 CFR 1.63(d))
(for continuation/divisional with Box 17 completed)
[Note Box 5 below]

    i. [ ] DELETION OF INVENTOR(S)
Signed statement attached deleting inventor(s) named in the prior application, see 37 CFR 1.63(d)(2) and 1.33(b)

5. [ ] Incorporation By Reference *(useable if Box 4b is checked)*
The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under Box 4b, is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein
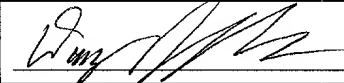
6. [ ] Microfiche Computer Program *(Appendix)*

7.* Nucleotide and/or Amino Acid Sequence Submission
(if applicable, all necessary)
   a. [ ] Computer Readable Copy
   b. [ ] Paper Copy (identical to computer copy)
   c. [ ] Statement verifying identity of above copies

ACCOMPANYING APPLICATION PARTS

8. [X] Assignment Papers (cover sheet & document(s))

9.* [ ] 37 CFR 3.73(b) Statement
(when there is an assignee)   [ ] Power of Attorney

10.* [ ] English Translation Document *(if applicable)*

11.* [ ] Information Disclosure Statement (IDS)/PTO-1449   [ ] Copies of IDS Citations

12.* [ ] Preliminary Amendment

13. [X] Return Receipt Postcard (MPEP 503)
(Should be specifically itemized)

14.* [ ] Small Entity Statement(s)   [ ] Statement filed in prior application, Status still proper and desired

15.* [ ] Certified Copy of Priority Document(s) *(if foreign priority is claimed)*

16. [ ] ....

17. If a CONTINUING APPLICATION, *check appropriate box and supply the requisite information:*

*[ ] Continuation   [ ] Divisional   [ ] Continuation-in-part (CIP)   of prior application No: *

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APPLICATION FOR UNITED STATES LETTERS PATENT

FOR

HEURISTICALLLY ASSISTED USER INTERFACE FOR A WIRELESS COMMUNICATION DEVICE

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HEURISTICALLY ASSISTED USER INTERFACE FOR A WIRELESS COMMUNICATION DEVICE

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CLAIM OF BENEFIT TO PROVISIONAL APPLICATION

This application claims the benefit of the earlier-field U.S. Provisional
Patent Application No. 60/145,467 filed 7/23/1999.

BACKGROUND OF THE INVENTION

10 **1.** **Field of the Invention**

The present invention relates to wireless communication systems and
devices and, more particularly, to a heuristically assisted user interface for a
·wireless communication device for use in conjunction with a wireless
communication system having access to distributed network resources.

15 **2.** **Description of the Related Art**

There are already several hundred million subscribers to wireless
communication services throughout the world. With this proliferation of wireless
communications, it is becoming more likely that parties will interact with one
another in instances where the only means of communication for one or both

20 parties is through wireless communication systems. Wireless communication
refers to the situation in which at least one party is making use of a portable,
wireless two-way interactive communication device and a wireless network.
Portable, wireless two-way interactive communication devices can, for example,
include personal digital assistants (PDAs), two-way pagers, palm-sized

25 computers, and mobile phones.

As the number of subscribers to wireless communication systems has
increased, so have the number of services available to those subscribers. Email
services, short message services, facsimile services, and voice mail services are
among a few of the services which are available to the users of these devices in

addition to standard phone service. Subscribers having a plurality of these services will also have a plurality of unique identifiers associated with the services. It is not uncommon for a subscriber to have a home phone number, a work phone number, a facsimile number, a home page URL and one or more

5   email addresses in addition to the unique identifiers associated with their wireless services. All of these services and their associated identifiers provide the subscribing public with flexibility in terms of how they communicate with each other.

For those individuals that are of particular interest to a subscriber, a record

10   (e.g. a contact list) may be kept as to the various ways to make contact. This record may be kept electronically (e.g. an address book on a computerized device) or non-electronically (e.g. personal organizers). For some organizations and ·groups, records of this type form the basis for their internal and external communications.

15   When a subscriber receives a message from another individual, the information required to contact that individual with a response may be contained within the received message. This information may comprise one or more direct contact identifiers (e.g. a phone number, an email address or a uniform resource identifier (URI)) and/or one or more indirect contact identifiers (e.g. the name of a

20   person or a public place) that may be used to lookup a direct contact identifier in an accessible resource (e.g. the phone book).

The task of processing all this information falls to the users of these wireless communication devices. There are limitations associated with these wireless communication devices that make this task even more difficult.

25   Specifically, the user interfaces and display screens associated with the wireless communications devices are not as user friendly as the input and viewing interfaces associated with personal computers. The processing power and storage capabilities are not comparable to their personal computer counterparts. Additionally, the users of these wireless communication devices may be

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performing other tasks (e.g. driving) that may limit their attention and/or ability to interact with the wireless communication device.

Traditional wireless communication devices, which support the types of services described above, generally require the user to place the wireless

5   communication device into the appropriate mode of operation prior to inputting and utilizing contact information. In addition to changing the device's mode of operation, the user may be required to place the subject contact information into a particular field.

Wireless communication devices are currently and will continue to be

10   mass-market electronic devices, and as such their success depends upon gaining acceptance among large segments of the population. Three of the most important factors, which will contribute to this success, are: 1) the price of the device, 2) the device features and 3) the user friendliness of the device. The processing power and storage capacity of wireless communication devices is largely limited by the

15   pricing constraints associated with devices of this type. These factors have considerable influence on the success or failure of these types of devices. The user friendliness (i.e. ease of use) of a wireless communication device is one of the most important features considered by consumers when making a purchase decision regarding such devices. More specifically, the wireless communication

20   device should be easy to use in the environment and under the conditions in which consumers find themselves desiring to use the device.

To improve the user friendliness of wireless communication, the device manufacturers and associated software developers have incorporated software which adds features such as automatic number identification and recognition of

25   uniform resource indicators (URIs) present in text. These methods have generally been focused on dealing with a single type of identifier (e.g. a phone number or a URI) and may require the user to highlight an identifier of interest prior to utilization.

In view of the foregoing, it would be desirable to have an apparatus and/or method that could enhance a subscriber's ability to utilize and manage contact identifier information in conjunction with the use of a wireless communication device.

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SUMMARY OF THE INVENTION

The present invention is directed to a method and apparatus for implementing a heuristic user interface for a wireless communications device

10   (also referred to as a mobile device herein) that assists the user with the management and utilization of contact identifiers (e.g. phone numbers, facsimile numbers, email addresses and uniform resource identifiers (URIs)). The content and headers of information that is stored on or being processed by a mobile device are automatically analyzed for the presence of predetermined classes of contact

15   ·   identifiers. Contact identifiers belonging to the predetermined classes are automatically identified and selected for possible use by the inventive process. Once identified and selected for possible use, the user may be provided with information describing the function of the encountered contact identifiers and may use these identifiers as direct contact identifiers (i.e. the identifiers may be used to

20   directly initiate contact with the device/individual associated with the contact identifier) or as indirect contact identifier (i.e. the identifiers may be used to retrieve data and or files from local and remote storage devices). Contact identifiers, belonging to the predetermined classes, may also be highlighted (e.g. bold text, reverse video, offset and magnification) in some applications of the

25   present invention.

Furthermore, the invention can be implemented in numerous ways, including as a method, an apparatus or device, a user interface, a computer readable medium, and a system. Several embodiments of the invention are discussed below.

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As a mobile device, one embodiment of the invention includes a display screen, a user interface, and computer program code for causing the mobile device to (i) automatically identify and select for possible use predetermined classes of contact identifiers contained within the content and/or headers stored on or being processed by a mobile device, and (ii) provision the user interface of the mobile device for functions related to the use of encountered contact identifiers. A processor operatively connected to the display screen, and the user interface operates to execute the program code described above. One of the functions, which may be associated with the selected contact identifier, is the retrieval of locally and/or remotely held information records containing the encountered contact identifiers.

As a method for operating a mobile device having a display screen and a user interface, one embodiment of the invention includes the operations of automatically selecting contact identifiers contained within the content and/or headers stored on or being processed by a mobile device, where the selected contacted identifiers belong to one or more predetermined classes of contact identifiers and provisioning the user interface and display screen to perform functions and display information in accordance with the selected contact identifier. The screen display presentation produced as a result of this method may also include representations of the selected contact identifier that cause the selected contact identifier to stand-out on the display screen of the mobile device.

As a computer readable medium including computer program code for operating a mobile device having a display screen and a user interface, one embodiment of the invention includes: computer program code for automatically identifying contact identifiers belonging to predetermined classes contained within the content and/or headers stored on or being processed by a mobile device and provisioning the user interface and display screen to perform functions and display information in accordance with the type of contact identifiers encountered. As part of the provisioning of the display screen, symbolic

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identifiers associated with the function of the encountered contact identifiers may be provided and displayed.

The advantages of the present invention are numerous. Different embodiments or implementations may yield one or more of the following advantages. One advantage of the invention is that users of mobile devices can automatically select, utilize, and manage predetermined classes of contact identifiers contained in information stored in and/or being processed by their mobile devices. Another advantage of the invention is that users of mobile devices are able to have the user interfaces and display screens of their mobile devices provisioned for interacting with selected contact identifiers. Still another potential advantage of the invention is that the selected contact identifiers can be used to retrieve information files containing the selected contact identifiers from local and remote sources. Yet another advantage of the invention is that the selected contact identifiers can be used to establish contact records (e.g. address book entries) for later use by a user of the mobile device.

Other aspects and advantages of the invention will become apparent from the following detailed description taken in conjunction with the accompanying drawings, which illustrate, by way of example, the principles of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will be readily understood by the following detailed description in conjunction with the accompanying drawings, wherein like reference numerals designate like structural elements, and in which:

5   **Figure 1** is a block diagram of a wireless communication system that may be used to implement the method of the present invention;

Figures 2A-2G are illustrations of a mobile device showing several illustrative display screens and which may be used in conjunction with the wireless communication system described in **Figure 1** to implement the method

10   of the present invention;

Figure 3 is a block diagram of a mobile device that may be used in conjunction with the wireless communication system described in **Figure 1** to implement the method of the present invention;

Figure 4 illustrates the contact selection and classification process which

15   may be used when implementing the method of the present invention; and

Figure 5 is a flow diagram which illustrates the steps associated with the operations of contact information classification, selection and utilization, as used when practicing the present invention.

DETAILED DESCRIPTION OF THE INVENTION

The present invention is directed to a method and apparatus for implementing a heuristic user interface for a mobile device that assists a user with the management and utilization of contact identifiers (e.g. phone numbers,

5 facsimile numbers, email addresses and uniform resource identifiers (URIs)). Content stored on or being processed by a mobile device is analyzed for the presence of predetermined classes of contact identifiers. When a contact identifier belonging to one of the predetermined classes is encountered, it is identified and the user interface of the subject mobile device is provisioned (e.g.

10 softkey functions and screen displays) for the possible use of the particular class of contact identifier encountered. The encountered contact identifiers may be used as direct contact identifiers or indirect contact identifiers. Direct contact identifiers are used to initialize the appropriate application for the class of identifier encountered (if required) and establish contact with an entity associated

15 with an encountered contact identifier (e.g. an email addressee). Indirect contact identifiers are used to retrieve locally and remotely held records containing the encountered contact identifiers. For example, if the mobile device has an address book entry containing an encountered identifier, then that address book record can be retrieved and displayed on the mobile device.

20 Mobile devices include, but are not limited to personal digital assistants (PDA) portable devices, cellular phones, palm-sized computing devices, and wireless capable remote controllers. It is not unusual for such devices to have less than 1% of the computing resources found in a personal computer. These mobile devices may have small display screens and limited user interface mechanisms

25 (e.g., a phone keypad) for user interactions with server devices and wireless networks providing mobile subscriber services. These characteristics are useful in achieving the desired size, weight, power and mobility features that have proven to be important factors for mass-market mobile devices.

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Embodiments of the invention are discussed below with reference to **Figures 1-5**. However, those skilled in the art will readily appreciate that the detailed description given herein with respect to these figures is for explanatory purposes as the invention extends beyond these limited embodiments.

5   **Figure 1** is a block diagram of a wireless communication system **100** that may be used to implement the method of the present invention. The wireless communication system **100** includes a plurality of mobile devices, which are represented by mobile device **102**. Mobile device **102** is supported by a wireless carrier network **104** that provides for voice and data communication services.

10   The wireless carrier network **104** couples to a wired network **108** through a gateway server **106**. The wired network **108** is, for example, the Internet, a local area network (LAN), or a wide area network (WAN). The wireless carrier network **104** can be any of a variety of types of wireless networks, for example, Cellular Digital Packet Data (CDPD), Global System for Mobile Communications

15   (GSM), Code Division Multiple Access (CDMA), Personal Handy Phone System (PHS) and Time Division Multiple Access (TDMA) networks, to name a few. Additionally, there may be a Short Message Service (SMS) server, which provides narrowband message services to mobile device **102**.

Gateway server **106** can also be referred to as a proxy server for mobile
20   device **102**, which is serviced by wireless carrier network **104**. Since the communication protocol used in wireless carrier network **104** is often different from that used in the wired network **108**, one of the functions of the gateway server **106** is to translate from one communication protocol to another. Through gateway server **106**, mobile device **102** has access to resources resident on a
25   network server **120**, which is coupled to the wired network **108**, and to user specific storage areas resident on the gateway server **106** itself. The user specific storage areas resident on gateway server **106** may be accessed and managed using the user interface of mobile device **102** or through a user interface associated with a personal computer **114**, which is also coupled to communicate through the
30   wired network **108**. One of ordinary skill in the art would understand that the

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functions of gateway server **106** may be performed by a network server device which includes or is capable of including a connection mechanism between wireless carrier network **104** and wired network **108**.

The communication protocol used by the wired network **108** may be
5   HyperText Transfer Protocol (HTTP) or Secure HyperText Transfer Protocol (HTTPS), a secure version of HTTP, and runs on Transmission Control Protocol (TCP). The communication protocol between wireless communication device **102** and gateway server **106** via the wireless carrier network **104** may be Handheld Device Transport Protocol (HDTP) (formerly known as Secure Uplink
10   Gateway Protocol (SUGP)) or Wireless Access Protocol (WAP), for example.

Through the communication system described in **Figure 1**, mobile device **102** has access to a plurality of incoming and outgoing communications services. Examples of these services include phone, facsimile, email, SMS, address book and network access services. Associated with each of the services is a
15   characteristic contact identifier such as a phone number, a name, a uniform resource indicator (URI), a zip code, or an address. It is not uncommon for a single message (e.g. an email message) to contain a plurality of these contact identifiers and it is not unusual for an individual using mobile device **102** to receive a message via one service (e.g. a phone call) and transmit a response using
20   another service (e.g. an email). Additionally, the user of mobile device **102** may be required to launch an application (e.g. an email application or a browser) prior to responding to a communication using a particular contact identifier.

Adding to the difficulty of this process are factors relating to the limited user interfaces and display screens generally associated with devices of this type.
25   The user interface may be comprised of a phone styled keypad that may not be conducive to the efficient entry of large text strings (e.g. uniform resource indicators (URIs)). The display screens are generally small and may only display a fraction of the information in a page-sized message.

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According embodiments of the present invention, content stored on or being processed by mobile device **102** is analyzed for the presence of predetermined classes of contact identifiers. When contact identifiers belonging to the predetermined classes are encountered during this process, the contact

5 identifiers are selected for possible use by the user of mobile device **102**. The user can then make a decision as to whether the contact identifier has been appropriately categorized and may utilize the contact identifier to perform the task indicated by its classification or to perform a user-specified task. For example a phone number can be used to place a phone call (i.e. a class task) or it can be used

10 to retrieve an address book entry containing that phone number (i.e. a user-specified task). The content being analyzed may include the headers associated with the content as well as the message content. Additionally, the analysis may be conducted sequentially (i.e. all components of the headers and content are analyzed in order) or the process may be optimized for speed (i.e. only certain

15 fields are analyzed).

For purposes of the described embodiments of the invention, the predetermined classes of contact identifiers may be classified into two general categories: 1) user-specified (also referred to as local) and 2) class-specified (e.g. email addresses, phone numbers and URIs). The user-specified category matches

20 strings against strings contained in files stored on mobile device **102** and/or in user specified storage areas resident on proxy server **106** or on a remote server device (e.g. network server **120**). The user-specified categories may also be associated with local and remote applications (e.g. private and/or public phone book applications). The class-specified category utilizes contact identifier

25 templates to functionally classify strings (i.e. abc@dot.com) resident within the analyzed content.

The following example is for purposes of illustrating the operation of the invention and not intended to limit its scope. If a user receives an email message containing an 11-digit numeric string preceded by the alpha-string "facsimile"

30 then the 11-digit numeric string would be classified as a facsimile number which

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is a class-specified contact identifier. The string could then be used to initialize a local facsimile application and send a facsimile message. The same 11-digit string could also be classified in a similar fashion using a user-specified classification. If a match to the 11-digit string were found in an address book for

5   a given record then it could be used to retrieve that record, where the record might contain other contact identifiers which could be used in a similar fashion.

        Figure 2A is a diagram of a mobile device **202**, which may be mobile device **102** of **Figure 1**. Mobile device **202** has a keypad **208**, softkeys **204A** and **204B** and a navigation rocker **206**, and has a display screen **203**, which provides

10   associated softkey identifiers **214A** and **214B**, a symbolic indicator **210** and a scroll indicator **218**, that allows a user thereof to interact with mobile device **202**. Additionally, the mobile device **202** includes a speaker **212** and a microphone **216** ·as may be found in conventional mobile telephones.

        Keypad **208** may be a typical phone keypad having various control

15   buttons, such as generic buttons and navigation (e.g., upward and downward arrow) buttons. The typical phone keypad includes twelve buttons, of which ten buttons are consecutively numbered 0 to 9, one button is for the "*" sign, and another button is for the "#" sign. Although not necessary for practicing the invention, the keypad **208** provides convenient and customary means for a user to

20   interact with mobile device **202**. Those having ordinary skill in the art would understand, that having a phone keypad is not a requirement to practice the present invention. Some mobile devices sometimes have no physical keys at all, such as those palm-sized computing devices that use soft keys or icons as an input mechanism.

25   For purposes of illustration, a screen display message **222** is shown on display screen **203**. Screen display message **222** contains two name contact identifiers <Mary Doe> and <Fremont Hotel>, an email contact identifier <doe@corp.com>, and a phone number identifier <650-817-1400>. The headers

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associated with screen display message **222** may also contain contact identifiers that are not visible to the user of mobile device **202**.

In accordance with the principles of the present invention, a user of a mobile device (e.g. mobile device **202**) may initiate automatic contact identifier analysis by pressing a predetermined key (e.g. soft key **204B**) or the analysis may be initiated without user intervention upon the occurrence of a predetermined event (e.g. the reception or designation of an email message). It is important to note at this point that the contents of a message of interest may be analyzed for contact identifiers without having to display the message. For example, analysis may be initiated by simply pointing to the storage location of a message of interest. This analysis is performed under program control of software stored on mobile device **202**. The analysis process is based on pre-stored class templates, ·rules for string identification, and determines matches to pre-stored strings. Character and symbolic strings associated with messages are scanned for the presence of strings matching these criteria. Additionally, the process takes into account string information that has preceded the string being identified. For example, an 11-digit number could be a phone number, a facsimile number, or a pager number. If that 11-digit number is preceded by the string <facsimile> or <fax>, then it is classified as a facsimile number and the mobile device is provisioned for that task if the user indicates a desire to use it.

Referring now to **Figure 2B**, notice that the string <Mary Doe> has been selected and is presented in large font with a frame at the bottom of the display screen **203**. It is important to note at this point that the present invention may be practiced with or without highlighting the encountered contact identifiers. The highlighting in this example is used for purposes of illustration and not limitation. Encountered strings may be presented to the user of mobile device **202** for possible use in any format supported by display screen **203**. The string <Mary Doe> follows the string <From:> that provides an indication that the following string may be a name. The string <Mary Doe>, once identified and selected for possible use, may be utilized to retrieve records containing that string. The

records retrieved may be stored in internal storage on mobile device **202** or on a remote server device (e.g. gateway server **106** or network server **120** of **Figure 1**). For example, the string could be used to look for a related address book entry.

One of ordinary skill in the art would understand that there are numerous other methods that may be utilized to identify names and identifiers of local interest. For example, a local rule that states that strings having two or more consecutive groupings of characters (e.g. words) beginning with uppercase letters should be classified as names. This rule would cause the strings <Mary Doe> and <Fremont Hotel> to be selected. As another example, names listed in an accessible address book, contact list or calendar could be used to test for the presence of contact identifiers of interest. Local rules of this type can be selected and managed by the user of mobile device **202** with the assistance of user preference menus and lists.

Referring again to **Figure 2B**, symbolic indicator **232** provides an indication that one or more information resources are available containing the string <Mary Doe>. As mentioned, the information resource(s) can be stored in the mobile device itself, such as an address book data base incorporated into the mobile device, or can be stored in, for example, a database file in the network server **120** (**Figure 1**). In the case of a database file stored by an entity separate from the mobile device, the database file can be a file which is accessible only to the user of the mobile device (e.g. accessible by providing a unique identifying code from the mobile device), or the database file can be one available to public access such as a public commercial database (e.g. telephone directory "white pages" or "yellow pages" database). By activating a predetermined key (e.g. softkey **204B**) the available resource is retrieved, as displayed at **238** in **Figure 2C**. In this example the available resource is an address book entry for Mary Doe. Note that in accordance with the invention that contact identifier analysis may also be performed on the retrieved resource using the same process described above.

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Referring now to **Figure 2D**, the string <doe@corp.com> has been
identified and highlighted (**240**) in the bottom of screen display **203**. Indicator
242 provides an indication that <doe@corp.com> has been classified as an email
contact identifier and may be used to send an email message by activating softkey

5   **204A**. Softkey identifier message **214A** indicates that the associated softkey
204A has been assigned the function of email initiation. More specifically,
activation of softkey **204A** causes an email application to be initialized by the
mobile device and the email contact identifier to be automatically inserted in the
<To:> field of the email message **248** as is illustrated in **Figure 2E**. The format

10   abc@dot.com is generally found in email addresses and may be used to select
email contact identifiers. Symbolic indicator **244** (**Figure 2D**) provides an
indication that there is also a corresponding information resource. In this
example, the resource is the address book entry referred to hereinabove and
displayed in **Figure 2C**. Activating softkey 204B may retrieve the information

15   resource.

Referring now to **Figure 2F**, the string <(650) 817-1400> has been
identified and highlighted (**250**) in the bottom of screen display **203**. Symbolic
indicator **256** provides an indication that <(650) 817-1400> is a phone number
identifier and may be used to place a phone call by activating softkey **204A**. The

20   softkey identifier **214A** indicates that the associated softkey 204A has been
assigned the function of initiating dialing. As previously stated, the present
invention may be practiced with or without the highlighting of encountered
contact identifiers.

According to the principles of the present invention, content stored on or

25   being processed by a mobile device (e.g. mobile device **202** of **Figures 2A-2F**)
may be automatically analyzed for the presence of pre-determined class specific
contact identifiers (e.g. phone numbers, email addresses or URIs) and/or user
specified contact identifiers (e.g. address book entries or proper nouns).
Encountered identifiers meeting the specified criteria are brought to the attention

30   of a user of the mobile device. The user of the mobile device may utilize the

encountered identifiers to perform tasks (e.g. place phone calls or send email messages) associated with their classification or to perform user specified tasks (e.g. retrieve a record or establish a record). The analysis described above may be applied to the headers and content of a particular message or file. The processing

5   of the message or file components (i.e. character strings) may be performed sequentially or optimized for processing speed.

It is important to note that any method of bringing encountered contact identifiers to the attention of the user of the subject mobile device may be utilized without deviating from the principles of the present invention. For example, as is

10   illustrated in **Figure 2G**, the user may be presented on the display screen **203** with a list **270** of contact identifiers present within a message of interest. Additionally, symbolic identifiers (e.g., icons) **272, 274, 276, 278,** and **280** may be presented in ·association with encountered contact identifiers present within the message to provide additional information. If the user of the subject mobile device desires to

15   utilize a contact identifier on the list to establish a communications session then the element selection indicator **284** is positioned adjacent to the contact identifier of interest (e.g. Selection 1 "Mary Doe") using the navigation rocker **206** and a predetermined key is activated.

Figure 3 is a block diagram of the primary functional components of a

20   mobile device **300,** which may be utilized in conjunction with the practice of the present invention. Mobile device **300** includes a Wireless Control Protocol (WCP) interface **328** that couples to a wireless network (e.g. **104** of **Figure 1**) via a radio frequency (RF) transceiver (not shown) to receive incoming and outgoing signals. A device identifier (ID) storage **332** supplies a device ID via WCP

25   interface **328**.

The device ID identifies a specific code that is associated with mobile device **300**. The device ID is used by a gateway server device (e.g. gateway server device **106** of **Figure 1**) to associate the mobile device **300** with a user account typically resident in the gateway server device. The device ID can be a

phone number of the device or a combination of an IP address and a port number. An example of a combination of an IP address and a port number is *204.163.165.132:01905* where *204.163.165.132* is the IP address and *01905* is the port number. The device ID is further associated with a subscriber ID authorized

5   by a wireless carrier network as part of the procedures to activate a subscriber account for the mobile device **300**. The subscriber ID may take the form of, for example, *861234567-10900_pn.mobile.att.net* by AT&T Wireless Service. It is a unique identification for mobile device **300**. Each of the mobile devices serviced by a gateway server device (e.g. gateway server device **106** of **Figure 1**) has a

10   unique device ID that is associated with a respective user account. These unique device IDs may be associated with network applications (e.g. address books) and user specific storage areas on the gateway server device.

Mobile device **300** also includes voice circuitry **336** (e.g., a speaker and a microphone), an encoder/decoder **320**, a processor **304**, a memory device **324**,

15   keypad circuitry **312**, and display circuitry **316**. These components and the previously described components allow mobile device **300** to function in a telephone mode of operation and a data mode of operation when used in conjunction with a gateway server device. In the telephone mode of operation, a user can cause mobile device **300** to place a phone call to another party having a

20   phone, either wireless or land-based.

In addition, mobile device **300** includes a client module **308**, which works in conjunction with processor **304** and the memory **324** to perform processing tasks required for the operation of mobile device **300**. These include: establishing a communication session with a gateway server device via a wireless network,

25   requesting and receiving data via the wireless network, displaying information on the mobile device display screen through the use of display circuitry **316**, and receiving user input from a user via a keypad controlled by keypad circuit **312**. Additionally, client module **308** contains computer code to cause processor **304** to execute instructions for controlling the operation of, among other things, a

30   browser. In one embodiment, the browser is a micro-browser, which typically

requires less computing power and memory than the HTML browsers used in personal computer. One such micro-browser is available from Phone.com located at 800 Chesapeake Drive, Redwood City, CA 94063, the assignee of the present invention.

5   The micro-browser may also include computer code, for performing functions relating to services other than browsing. Examples of such services include, email, facsimile, SMS, remote personal file services (e.g. a network address book) and paging. One of ordinary skill in the art would understand that program code associated with these services may be incorporated in the micro-

10   browser application, exist as independent applications or be incorporated in some other application resident on the mobile device. Encountered contact identifiers may be utilized to initialize one or more of these service applications and to automatically fill predetermined fields within initialized applications. This reduces the amount of input required from the user thereby making it easier to

15   perform a given task and assist in overcoming some of the inherent limitations of the interfaces of such devices.

Figure 4 illustrates a contact identifier analysis process in accordance with the practice of an embodiment of the present invention. A message 400, which is stored on or being processed by a mobile device (i.e. mobile device 102 of Figure

20   1), is analyzed for the presence of contact identifiers meeting predetermined criteria. The contents of message 400 (shown in the left side of Figure 4) may be comprised of a plurality of distinguishable string entities containing alphanumeric and symbolic elements. Examples include grouping of numbers having a certain number of elements (e.g. (650) 817-1400), an alphanumeric string including a

25   particular symbol (e.g. @ in doe@corp.com), a string having a particular format (e.g. <.com> without @), an alphanumeric sequence having a particular arrangement of upper and lower case letters (e.g. Mary Doe), an alpha numeric string following a particular string sequence (e.g. <From:>, <Facsimile:>, <Fax:> etc.) and others.

The string entities are automatically selected by a program-controlled process and compared to predetermined string templates and user specified string entities (e.g. entries in an address book). This automatic selection process may be used to sequentially process the string entities in message **400** and any associated

5   headers. The entity <doe@corp.com> **402** is an example of a string entity that has been selected for analysis in message **400**. In this example, the string entity <doe@corp.com> **402** is compared to the entries in a user specified file (e.g. an address book) at **404** and a match is found (i.e. Local Identifier = Yes). Some indication of this match (e.g. indicator **232** of **Figure 2B**) may be provided to the

10   user of the mobile device and the string entity may be used to retrieve the source file containing the matching string. For an example, if there is an address book record that includes the subject contact identifier then that record may be retrieved.

At **406** the string entity <doe@corp.com> **402** is compared to a template

15   for email contact identifiers. String entity **402** has the basic format for an email contact identifier (i.e. it contains @ and .com) so a match is registered. As was the case before, some indication of this match may be provided to the user (e.g. indicator **210** of **Figure 2A**) and entity **402** may be used to initialize an email application and pre-fill selected fields.

20   At **408, 410,** and **412** string entity <doe@corp.com> **402** is compared to three other contact identifier types (i.e. URI, phone number and facsimile number). No other matches are found for string entity <doe@corp.com> **402** and the process automatically proceeds to the next string entity. In this example, the string entities contained in message **400** and any associated headers are processed

25   sequentially. One of ordinary skill in the art would understand that processing methodologies other than sequential processing may be utilized without deviating from the principles of the present invention. For example, the analysis could be limited to a particular portion of a message entity (e.g. the body of a message entity) or performed only on strings exceeding a pre-determined number of

30   characters.

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In general, e-mail addresses, for example, have a well-defined format, such as: <name>@<something>.(com|net|org|gov). This makes it relatively easy to identify an e-mail address in a generalized text message. Likewise, a web link or URL has an unambiguous format (possibly preceded by "http://") <something>.(com|net|org|gov). In addition to identification using these known formats, a searching procedure can use a simple heuristic to look for a string following phrases like "e-mail me at", "mail me at", "my e-mail address is", "you can reach me at", "the site is", "the link", or the like.

In contrast, phone numbers can be represented a number of different ways. They may range from only a few digits ("x1234") to many (011-61-418-333-444). A reasonably strong rule for identifying phone numbers is to look for from 4 to 20 digits interspersed with common punctuation marks, such as "()", "[]", ".", "-", or spaces. As above, the searching can be aided through the identification of common lead-in phrases such as "call me at", "my number is", "Home", "Work", "Ext.", and the like. Note that a partial number like "ext. 1459" can be expanded into a full telephone number by matching it in the local phone number list or address book.

A given message may contain many potential e-mail addresses, URLs or phone numbers. In some cases, therefore, it can be advantageous for the searching procedure to scan the entire message and, instead of stopping at the first potential string, find all candidates and assign each a "quality" factor according to the form of the string or the metric used to identify it. Then, the string judged as most likely being a valid contact identifier can be presented to the user first. Thus, a message that contained "1234", followed by "www.yahoo.com" would rank the URL higher than the partial phone number and present it first.

Figure 5 is a flow diagram of a string entity processing operation **500** according to one embodiment of the present invention. The string entity processing operation **500** is, for example, performed on a mobile device, such as the mobile device **102** illustrated in **Figure 1**.

String entity processing operation **500** is initiated by user interaction via the user interface of the mobile device (e.g. mobile device **102** of **Figure 1**). At **502** a user of the mobile device selects a message for contact identifier analysis/processing. As previously stated, the selected message being processed

5 may or may not be displayed on the display screen of the subject mobile device. For example, the selected message may be a designated message stored in the subject mobile device. In the case where the message is stored on the mobile device, the message may be selected for analysis/processing by selecting an identifier associated with the message.

10 Once a message is selected for processing/analysis, contact identifier templates and local information (e.g. user-specified information and rules such as the location identifiers (e.g. storage locations or identifiers) for files containing ·comparison strings and local rules for string entity classification) are loaded (**504**). At **506** message strings are automatically loaded for processing/analysis.

15 As previously stated, string entities may be processed sequentially, but this is not a requirement for the practice of the present invention.

At **508** the string entity loaded at **506** is compared to the loaded templates and local information and a determination is made as to whether the loaded string can be classified as belonging to one or more of the predetermined contact

20 identifier categories (e.g. local contact, email, URI, phone number, or facsimile number). If a match is found at **508** then a command is generated at **510**, which may cause information relating to the encountered contact identifier to be displayed on the display screen of the mobile device. This information may provide information relating to the type of contact identifier encountered or to the

25 type of information that may be retrieved using the encountered contact identifier. At **512** a determination is made as to whether the user desires to perform some task with the encountered contact identifier. For example, if the encountered contact identifier is classified as an email address, then it may be utilized to initialize a local email program and pre-fill certain fields in the email message.

30 User selections for tasks to be performed are processed at **514**. Upon completion

of the selected task at **514**, the user is given the opportunity to terminate string

entity processing operation **500** at **516**.

If a match is not found at **508**, then a determination is made at **518** as to

whether the end of the message has been reached. If the end of the message is

5   reached then the string entity processing operation **500** is terminated. If the end

of the message has not been reached at **518**, then the next string entity is loaded

(**520**) and is processed beginning at **508**.

According to the principles of the present invention, the user of a mobile

device may designate a file for contact identifier analysis/processing. The

10   designated file may be displayed on (or being processed by) the subject mobile

device or it may be stored on the subject mobile device. Encountered contact

identifiers matching predetermined criteria found in the designated file are

brought to the attention of the user via some mechanism (e.g. a list of encountered

contact identifiers as displayed in **Figure 2G**). Additionally, symbolic indicators

15   may be displayed which provide additional information relating to the function of

the encountered contact identifiers. The encountered contact identifiers may be

utilized to perform some task relating to their classification (e.g. send an email

message) and/or they may be utilized to perform a user specified task (retrieve a

record containing an encountered contact identifier).

20   The invention can take the form of a computer readable code on a

computer readable medium. The computer readable medium is any data storage

device that can store data, which can thereafter, be read by a computer system.

Examples of a computer readable medium include read-only memory, random-

access memory, CD-ROMs, magnetic tape, optical data storage devices, and

25   carrier waves.

In a preferred embodiment, the computer readable code is available for

download on a server system such that authorized client systems may couple to

the server system to retrieve the computer readable code across a computer

network. In this manner, the computer readable code may be distributed over the

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network to the client computer system. For example, a plurality of wireless client devices such as cell phone **102** in **Figure 1** may download the same copy of software from a single server system such as server **120** using the available network **104**.

5   The advantages of the invention are numerous. Different embodiments or implementations may yield one or more of the following advantages. One advantage of the invention is that users can be alerted to the presence of contact identifiers belonging to predetermined classes. Another advantage of the invention is that users are able to utilize encountered contact identifiers to perform

10   class specific or user-specified tasks. Still another potential advantage of the invention is that the user interaction with the user interface may be made more efficient. Yet another advantage of the invention is that users may retrieve ·remotely held resources containing encountered contact identifiers.

It will be apparent from the foregoing description that many of the

15   functions of the described embodiments of the invention can be implemented by the use of instruction codes for controlling a processing device in a mobile wireless communications device. Having described in detail the principles, applications and operation of the invention, it is within the scope of those of ordinary skill in the art to perform the invention by providing instruction codes to

20   implement the inventive functions to operate on existing or specifically designed mobile devices. It will be appreciated, of course, that the instruction codes for implementing the invention will vary depending upon the mobile device and the processing device therein upon which the instruction codes are to operate.

The many features and advantages of the present invention are apparent

25   from the written description, and thus, it is intended by the appended claims to cover all such features and advantages of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation as illustrated

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and described. Hence, all suitable modifications and equivalents may be considered to fall within the scope of the invention.

We claim:

1   **1.**   A method for operating a wireless communication device having a

2   display screen and a user interface, comprising:

3   automatically finding one or more contact identifiers belonging to

4   predetermined classes within a message entity; and

5   displaying on the display screen of the wireless communications device

6   descriptive information relating to the found contact identifiers.

1   **2.**   A method as recited in claim **1**, wherein the message entity is

2   comprised of the headers and content of a text based message.

1   **3.**   A method as recited in claim **2**, wherein the text-based message is

2   stored on the wireless communication device.

1   **4.**   A method as recited in claim **2**, wherein the text-based message is

2   being processed by the wireless communication device.

1   **5.**   A method as recited in claim **1**, wherein the message entity is a

2   markup language file.

1   **6.**   A method as recited in claim **5**, wherein the markup language file

2   is selected from the group consisting of Handheld Device Markup Language

3   (HDML), Wireless Markup Language (WML), Hypertext Markup Language

4   (HTML), Compact Hypertext Markup Language (cHTML), and Extensible

5   Markup Language (XML).

1   **7.**   A method as recited in claim **1**, wherein the predetermined classes

2   of contact identifiers are selected from a group consisting of electronic mail

3   contact identifiers, Uniform Resource Indicators (URIs), phone number contact

4   identifiers, facsimile number contact identifiers, pager number contact identifiers,

5   SMS contact identifiers and user specified contact identifiers.

1   **8.**   A method as recited in claim **7**, wherein the user specified contact

2   identifiers are field entries in a file stored in association with a unique identifier

3   for the user of the wireless communication device.

1   **9.**   A method as recited in claim **8**, wherein the file stored in

2   association with a unique identifier for the user of the wireless communication

3   device is selected from a group consisting of an address book, a calendar and a

4   contact list.

1   **10.**   A method as recited in claim **8**, wherein the user specified contact

2   identifiers are field entries in a database stored on a remote server device.

1   **11.**   A method as recited in claim **10**, wherein the database stored on

2   the remote server device is a public commercial database.

1   **12.**   A method as recited in claim **1**, wherein the descriptive

2 information relating to found contact identifiers includes a symbolic information

3 indicator.

1   **13.**   A method as recited in claim **12**, wherein the symbolic information

2 indicator is an icon.

1   **14.**   A method as recited in claim **1**, further comprising:

2   associating a found contact identifier with one of a plurality of

3   communication services accessible through the wireless

4   communication device; and

5   utilizing the found contact identifier to setup a communication link for the

6   associated communication service accessible through the wireless

7   communication device.

1   **15.**   A method as recited in claim **14**, wherein the communication

2 services accessible through the wireless communication device are selected from

3 a group consisting of electronic mail services, facsimile services, short message

4 services, paging services, file retrieval services and phone services.

1   **16.**   A method as recited in claim **1**, further comprising:

2   identifying resources containing found contact identifiers; and

3   retrieving the identified resources.

1   **17.**   A method as recited in claim **1**, wherein the wireless

2   communication device incorporates a microprocessor and storage area for

3   program code.

1   **18.**   A method as recited in claim **17**, wherein the microprocessor

2   utilizes the program stored in the storage area to control a phone function and a

3   local application.

1   **19.**   A method as recited in claim **18**, wherein the local application is

2   an address book application.

1   **20.**   A method as recited in claim **18**, wherein the local application is a

2   calendar application.

1   **21.**   A method as recited in claim **18**, wherein the local application is a

2   contact list.

1   **22.**   A method as recited in claim **1**, wherein the wireless

2   communication device is selected from a group consisting of a mobile phone, a

3   personal digital assistant, and a two-way pager.

1   **23.**   A computer readable medium on which is encoded computer

2 program code for providing a display on the display screen of a wireless

3 communication device, comprising:

4   computer program code for finding contact identifiers belonging to

5   predetermined classes within a message entity; and

6   computer program code for generating a screen display presentation

7   relating to the found contact identifiers belonging to pre-determined

8   classes.

1   **24.**   A computer readable medium as described in claim **23**, further

2 comprising:

3   computer program code for displaying symbolic identifiers relating to the

4   function of found contact identifiers belonging to predetermined

5   classes.

1   **25.**   A computer readable medium as described in claim **23**, wherein

2 the message entity is comprised of the headers and content associated with a

3 designated message.

1   **26.**   A computer readable medium as described in claim **23**, wherein

2 the message entity is a markup language file.

1   **27.**   A computer readable medium as described in claim **26**, wherein

2 the markup language file is selected from a the group consisting of Handheld

3 Device Markup Language (HDML), Wireless Markup Language (WML),

4 Hypertext Markup Language (HTML), Compact Hypertext Markup Language

5 (cHTML), and Extensible Markup Language (XML).

1   **28.**   A computer readable medium as described in claim **23**, wherein

2   the predetermined classes of contact identifiers are selected from the group

3   consisting of email contact identifiers, Uniform Resource Indicators (URIs),

4   phone number contact identifiers, facsimile number contact identifiers, pager

5   number contact identifiers, SMS contact identifiers and user specified contact

6   identifiers.

1   **29.**   A computer readable medium as described in claim **28**, wherein

2   the user specified contact identifiers are field entries in a file stored in association

3   with a unique identifier for the user of the wireless communication device.

1   **30.**   A computer readable medium as described in claim **29**, wherein

2   the file stored in association with a unique identifier for the user of the wireless

3   communication device is selected from a group consisting of an address book, a

4   calendar and a contact list.

1   **31.**   A computer readable medium as described in claim **28**, wherein

2   the user specified contact identifiers are field entries in a database stored on a

3   remote server device.

1   **32.**   A computer readable medium as described in claim **31**, wherein

2   the database stored on the remote server device is a public commercial database.

1   **33.**   A computer readable medium as described in claim **28**, wherein

2   the screen display presentation includes symbolic information identifiers.

1   **34.**   A computer readable medium as described in claim **33**, wherein

2   the symbolic identifiers are icons.

1   **35.**   A wireless communication device having a display screen and a

2   user interface, comprising:

3   a storage device for storing message entities;

4   a memory for storing program code for a processor; and

5   a processor coupled to the storage device and the memory, wherein the

6   processor operates to execute the program code stored in the memory

7   to find contact identifiers belonging to predetermined classes of

8   contact identifiers in the message entities stored on the storage device

9   and display descriptive information on the display screen relating to

10   the found contact identifiers.

1   **36.**   A wireless communication device as described in claim **35**,

2   wherein the message entities are comprised of the headers and content associated

3   with designated text based messages.

1   **37.**   A wireless communication device as described in claim **30**,

2   wherein the text-based messages are markup language files.

1   **38.**   A wireless communication device as described in claim **37**,

2   wherein the markup language file is selected from a the group consisting of

31

3   Handheld Device Markup Language (HDML), Wireless Markup Language

4   (WML), Hypertext Markup Language (HTML), Compact Hypertext Markup

5   Language (cHTML), and Extensible Markup Language (XML).

1   **39.**   A wireless communication device as described in claim **35,**

2   wherein the predetermined classes of contact identifiers are selected from the

3   group consisting of electronic mail contact identifiers, Uniform Resource

4   Indicators (URIs), phone number contact identifiers, facsimile number contact

5   identifiers, pager number contact identifiers, SMS contact identifiers and user

6   specified contact identifiers.

1   **40.**   A wireless communication device as described in claim **39,**

2   wherein the user specified contact identifiers are field entries in a file stored in

3   association with a unique identifier for the user of the wireless communication

4   device.

1   **41.**   A wireless communication device as described in claim **40,**

2   wherein the file stored in association with a unique identifier for the user of the

3   wireless communication device is selected from a group consisting of an address

4   book, a calendar and a contact list.

1   **42.**   A wireless communication device as described in claim **40,**

2   wherein the user specified contact identifiers are field entries in a database stored

3   on a remote server device.

1   **43.**   A wireless communication device as described in claim **42**,

2 wherein the database stored on the remote server device is a public commercial

3 database.

1   **44.**   A wireless communication device as described in claim **35**,

2 wherein the descriptive information relating to found contact identifiers includes a

3 symbolic information indicator.

1   **45.**   A wireless communication device as described in claim **44**,

2 wherein the symbolic information indicator is an icon.

1   **46.**   A wireless communication device as described in claim **35**, further

2 comprising:

3   program code stored in the memory for associating found contact

4   identifiers with communication services accessible through the

5   wireless communication device; and

6   program code stored in the memory for utilizing found contact identifiers

7   to setup communication links for communication services accessible

8   through the wireless communication device.

33

HEURISTICALLY ASSISTED USER INTERFACE
FOR A WIRELESS COMMUNICATION DEVICE

ABSTRACT OF THE DISCLOSURE

5   A method and apparatus for implementing a heuristic user interface for a mobile device that assists a user with the management and utilization of contact identifiers (e.g. phone numbers, facsimile numbers, email addresses and uniform resource identifiers (URIs)). Content stored on or being processed by a mobile device is analyzed for the presence of predetermined classes of contact identifiers.

10   When a contact identifier belonging to one of the predetermined classes is encountered, it is presented to the user of the mobile device on the display screen and the user interface of the mobile device is provisioned (e.g., softkey assignments and screen displays) for the particular class of contact identifier encountered. The encountered contact identifiers may be used as direct contact

15   identifiers or indirect contact identifiers. Direct contact identifiers are used to initialize the appropriate application for the class of identifier encountered (e.g. an email application for an email contact identifier) and establish contact with an associated entity (e.g. an email addressee). Indirect contact identifiers are used to retrieve locally and remotely held records containing the encountered contact
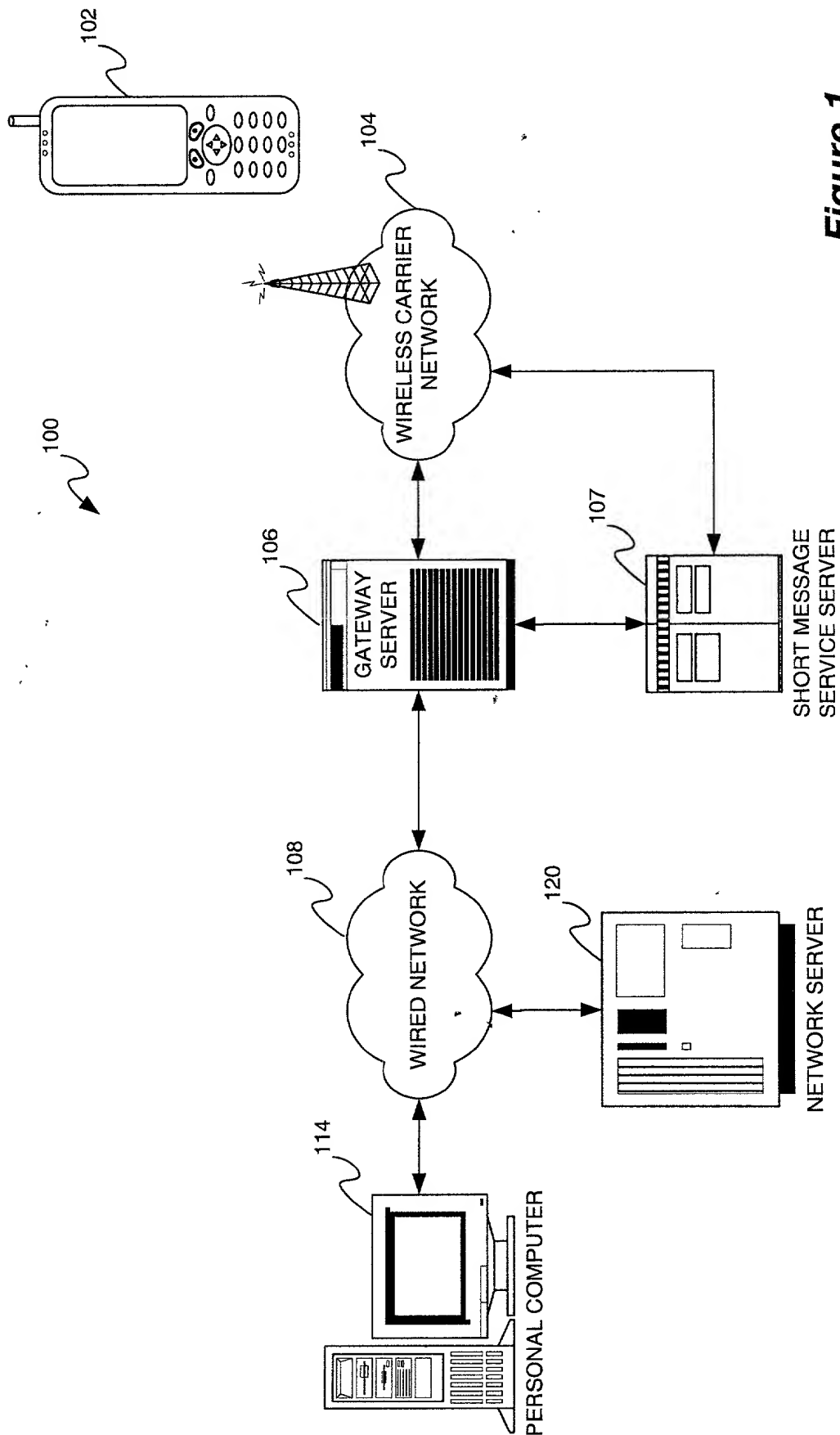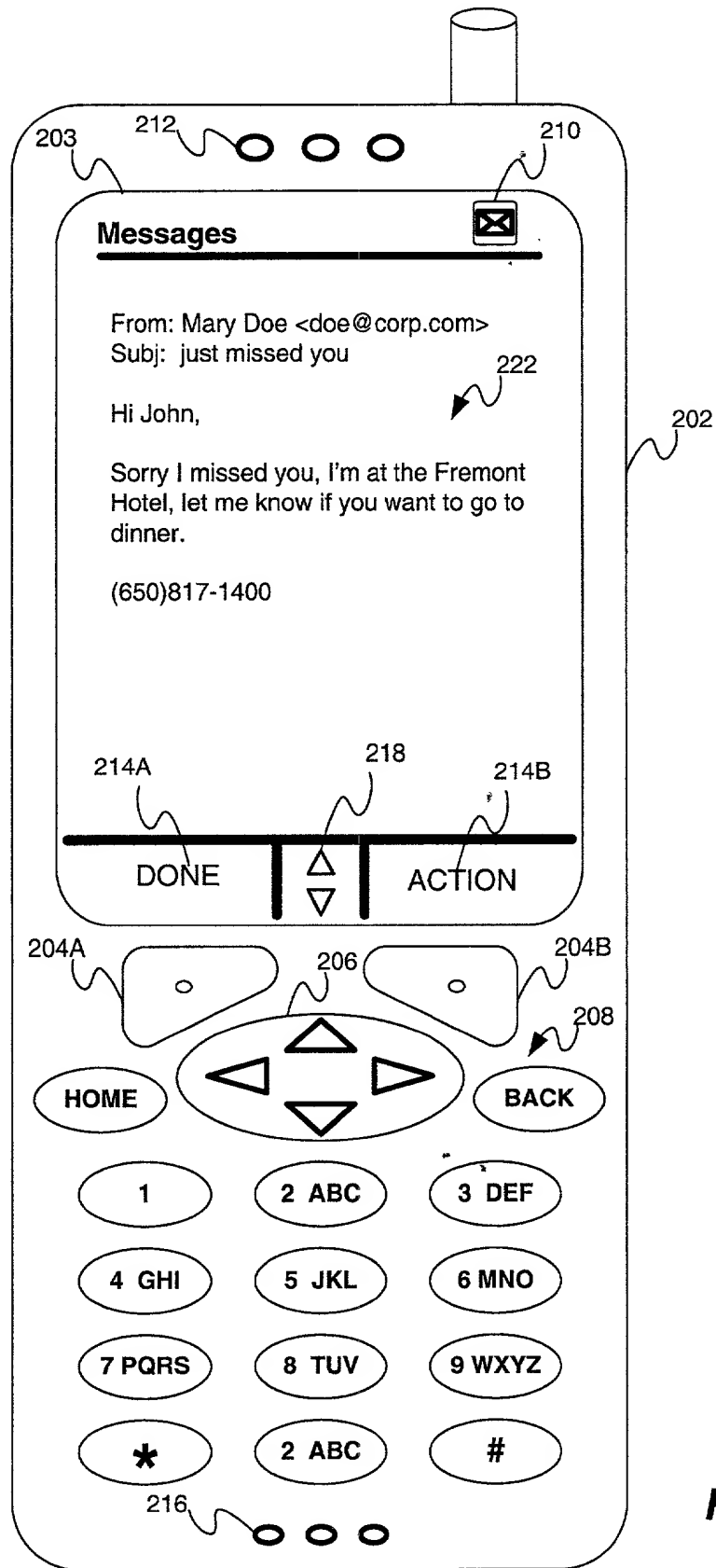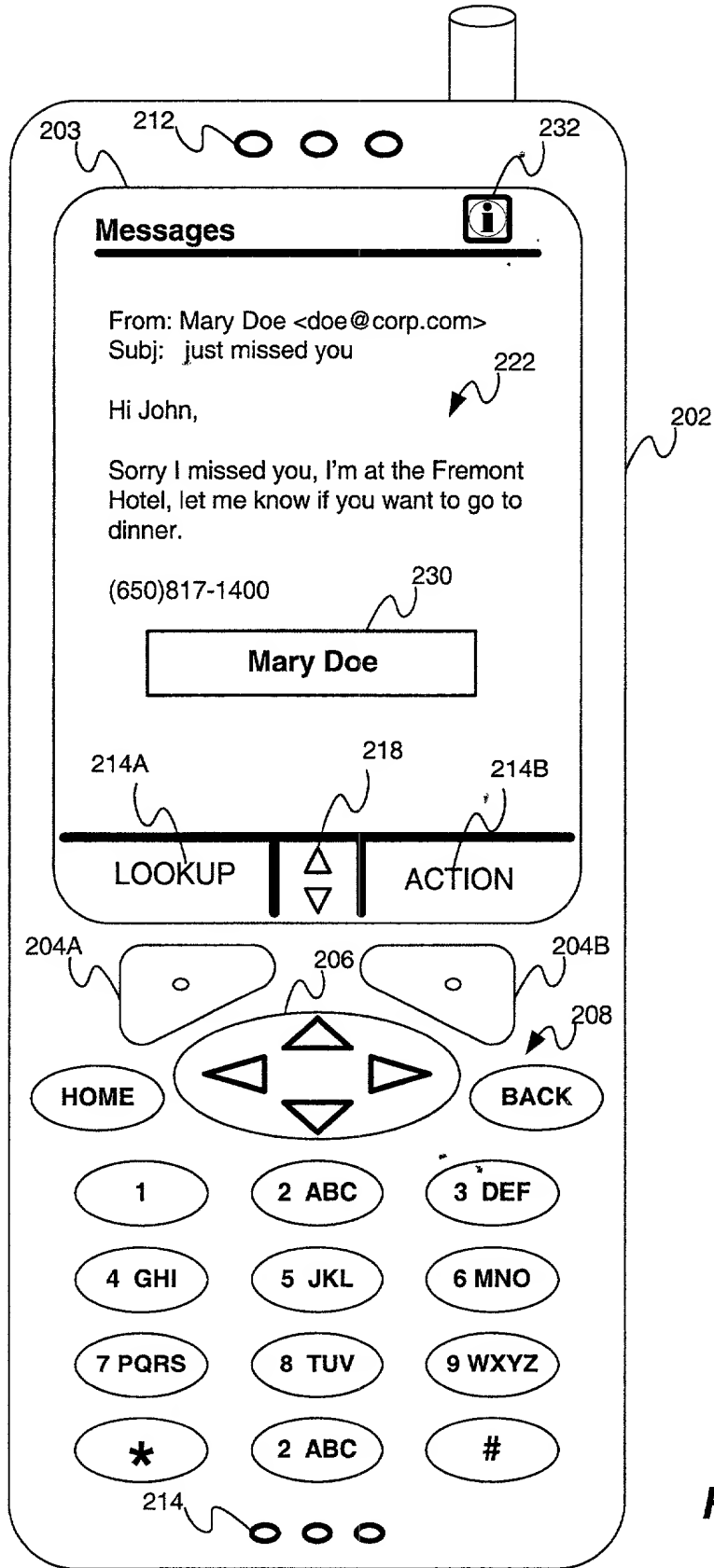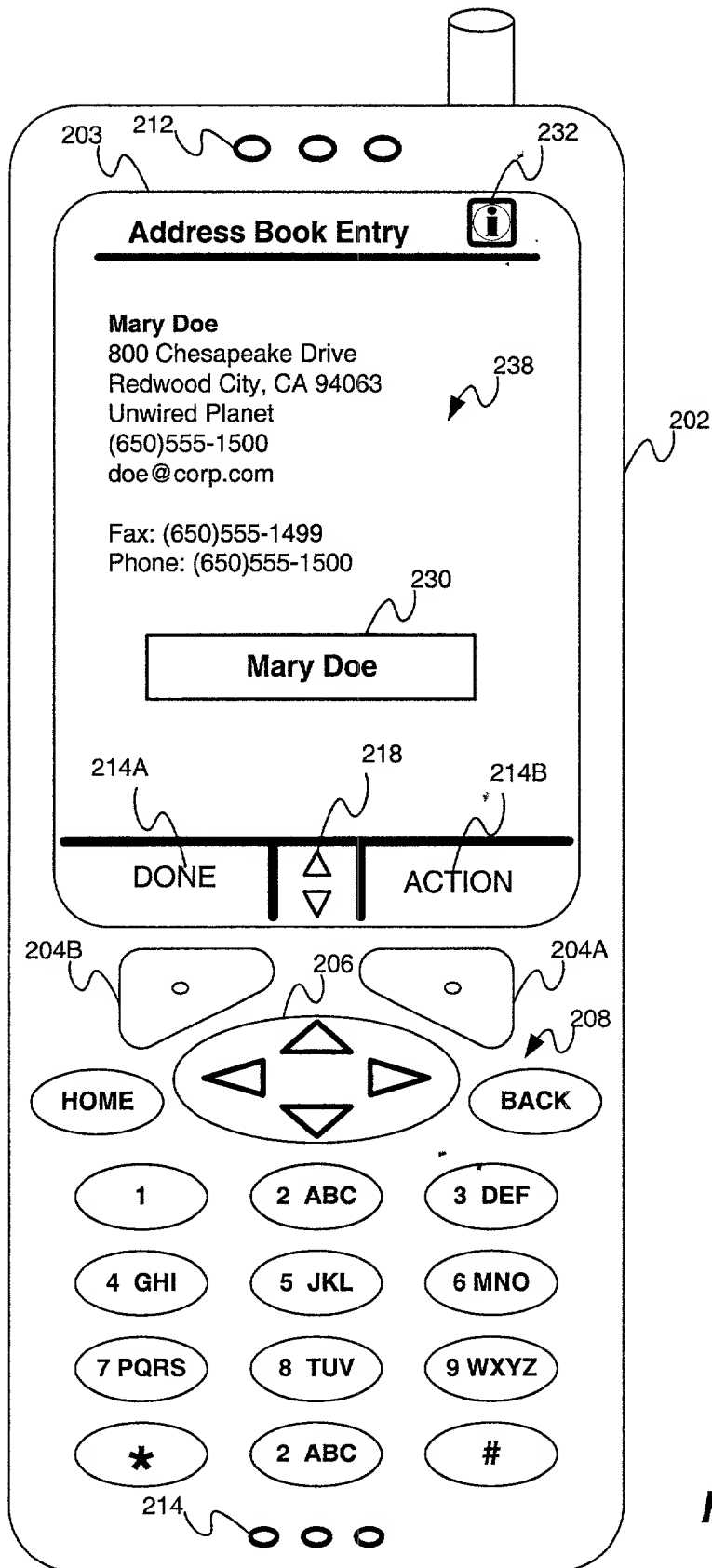
20   identifiers.

Figure 1

203 212 210

Messages ✉

From: Mary Doe <doe@corp.com>
Subj: just missed you

222

Hi John,

202

Sorry I missed you, I'm at the Fremont
Hotel, let me know if you want to go to
dinner.

(650)817-1400

214A   218   214B

DONE   △▽   ACTION

204A   206   204B

208

HOME   ◁ △ ▷ ▽   BACK

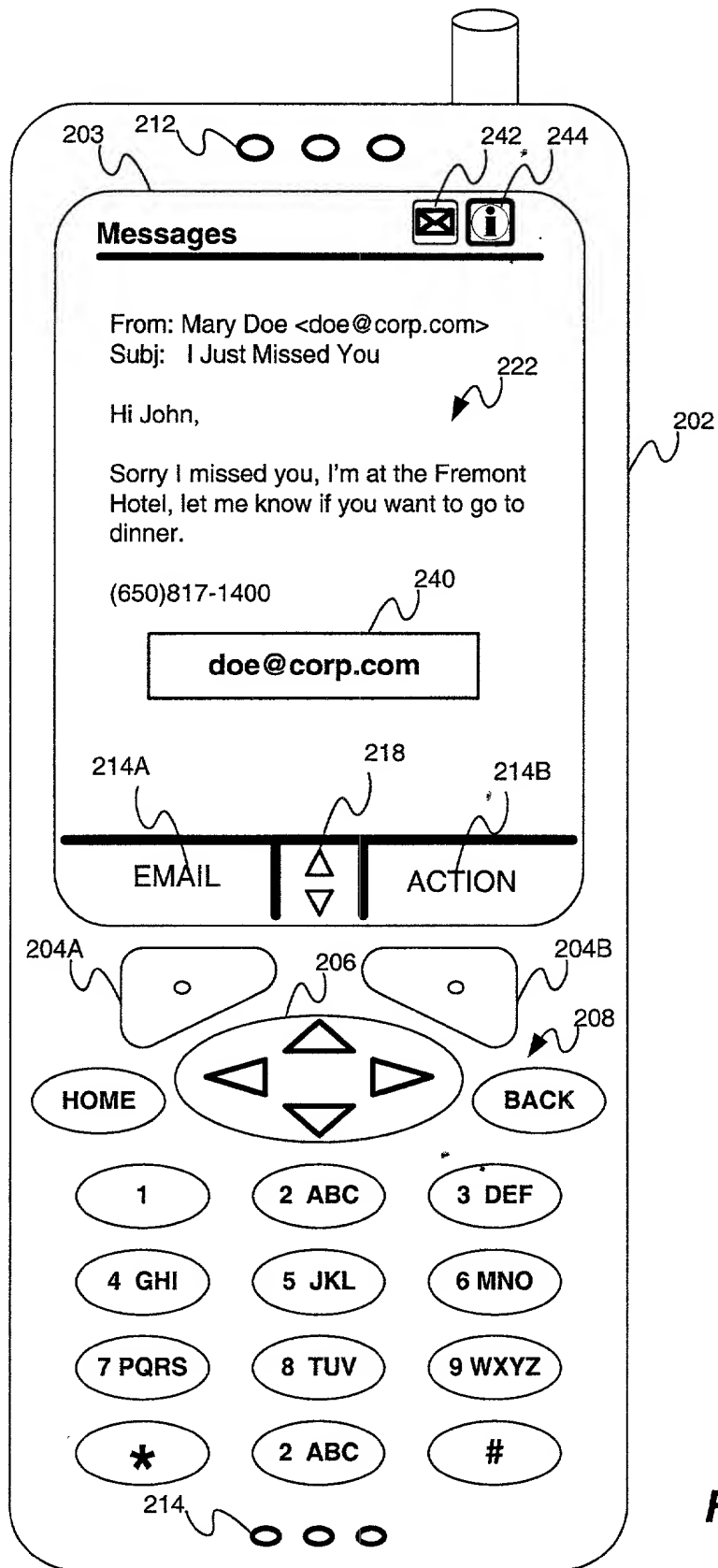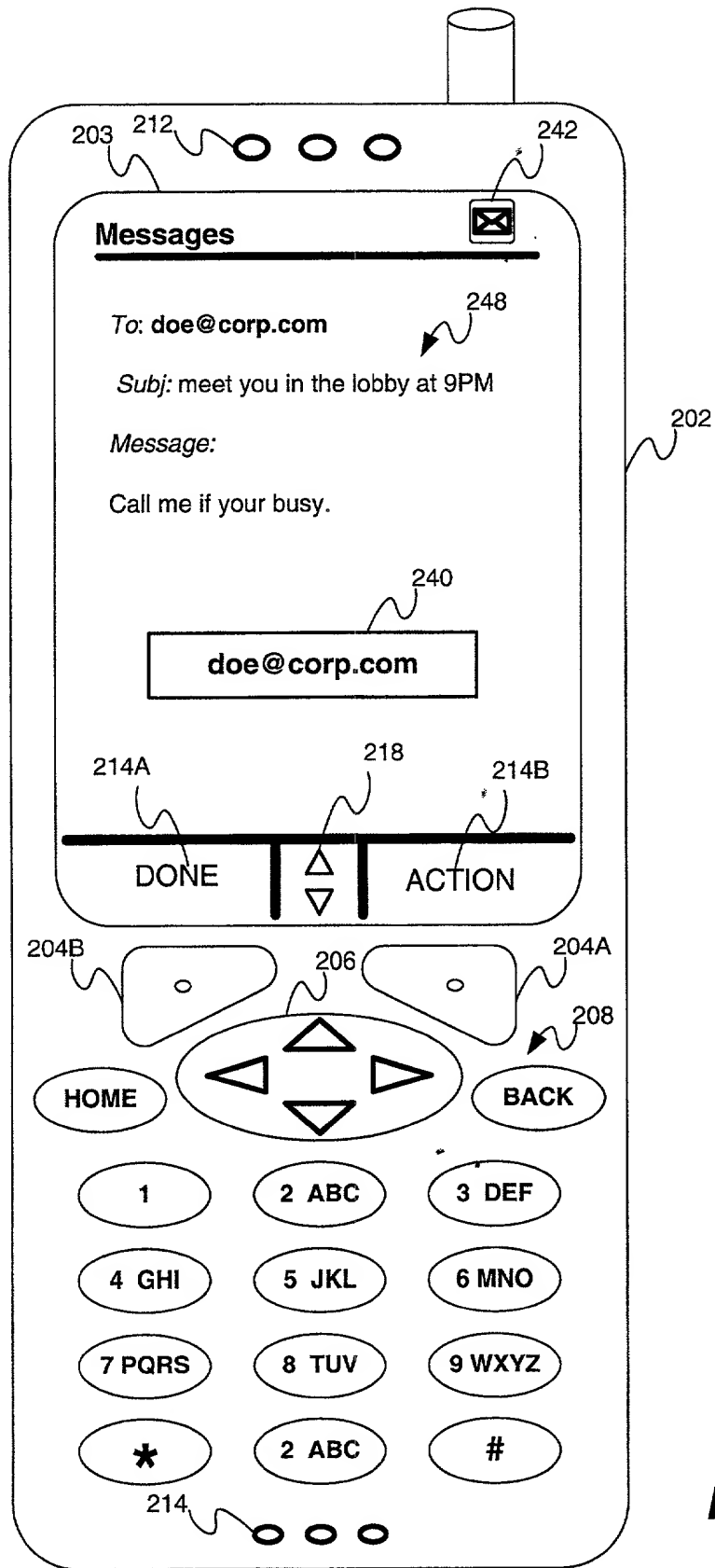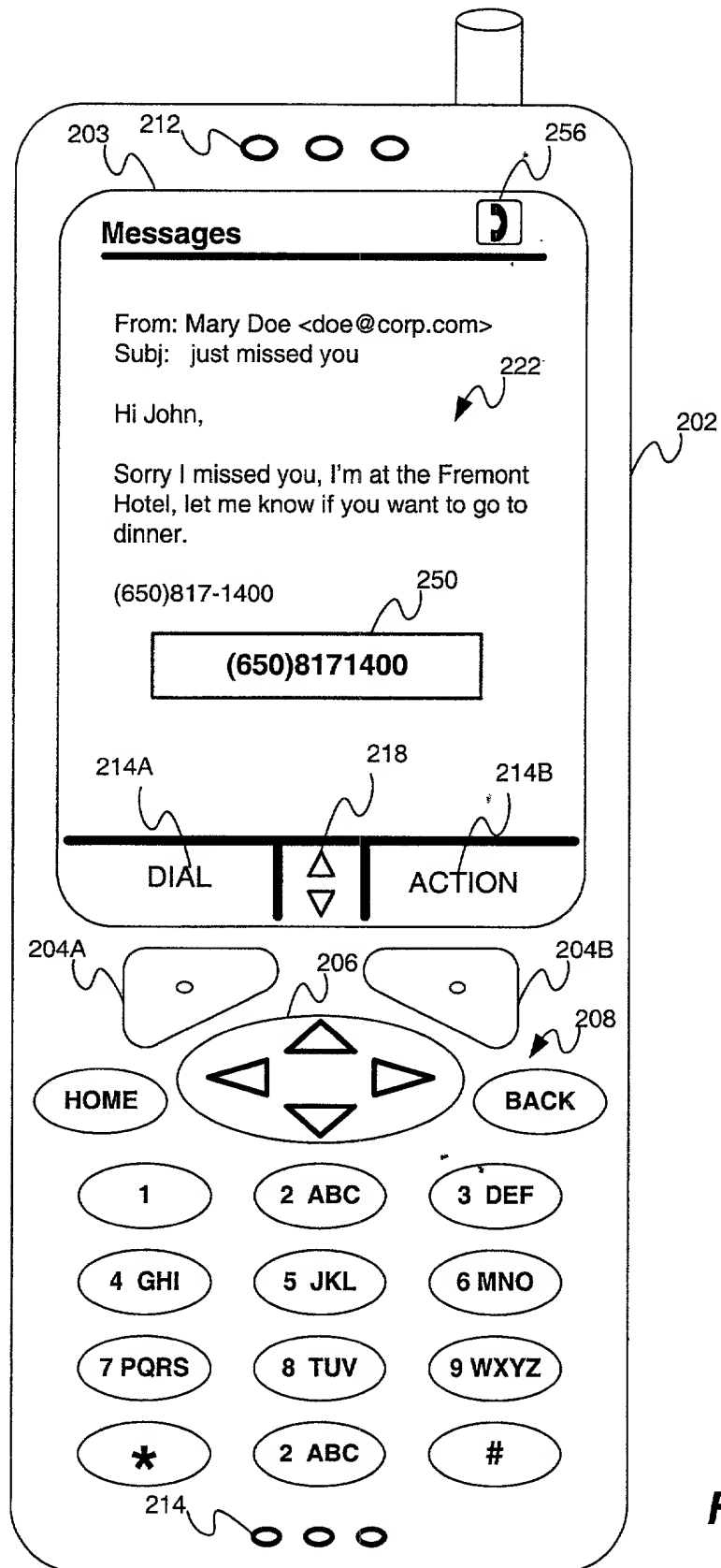| 1 | 2 ABC | 3 DEF |
4 GHI	5 JKL	6 MNO
7 PQRS	8 TUV	9 WXYZ
*	2 ABC	#

216

Figure 2A

Figure 2B

Figure 2C

Figure 2D

Figure 2E

Figure 2F

Figure 2G
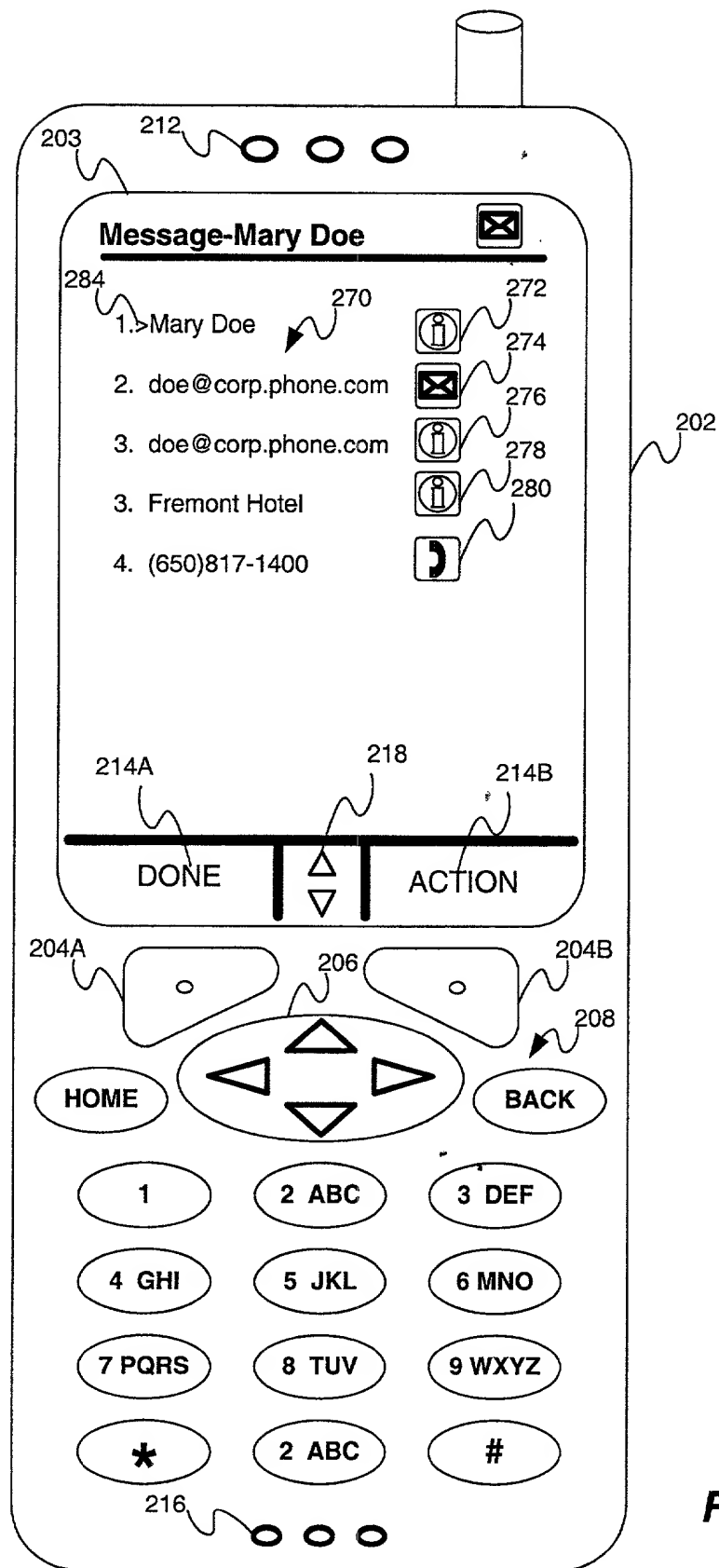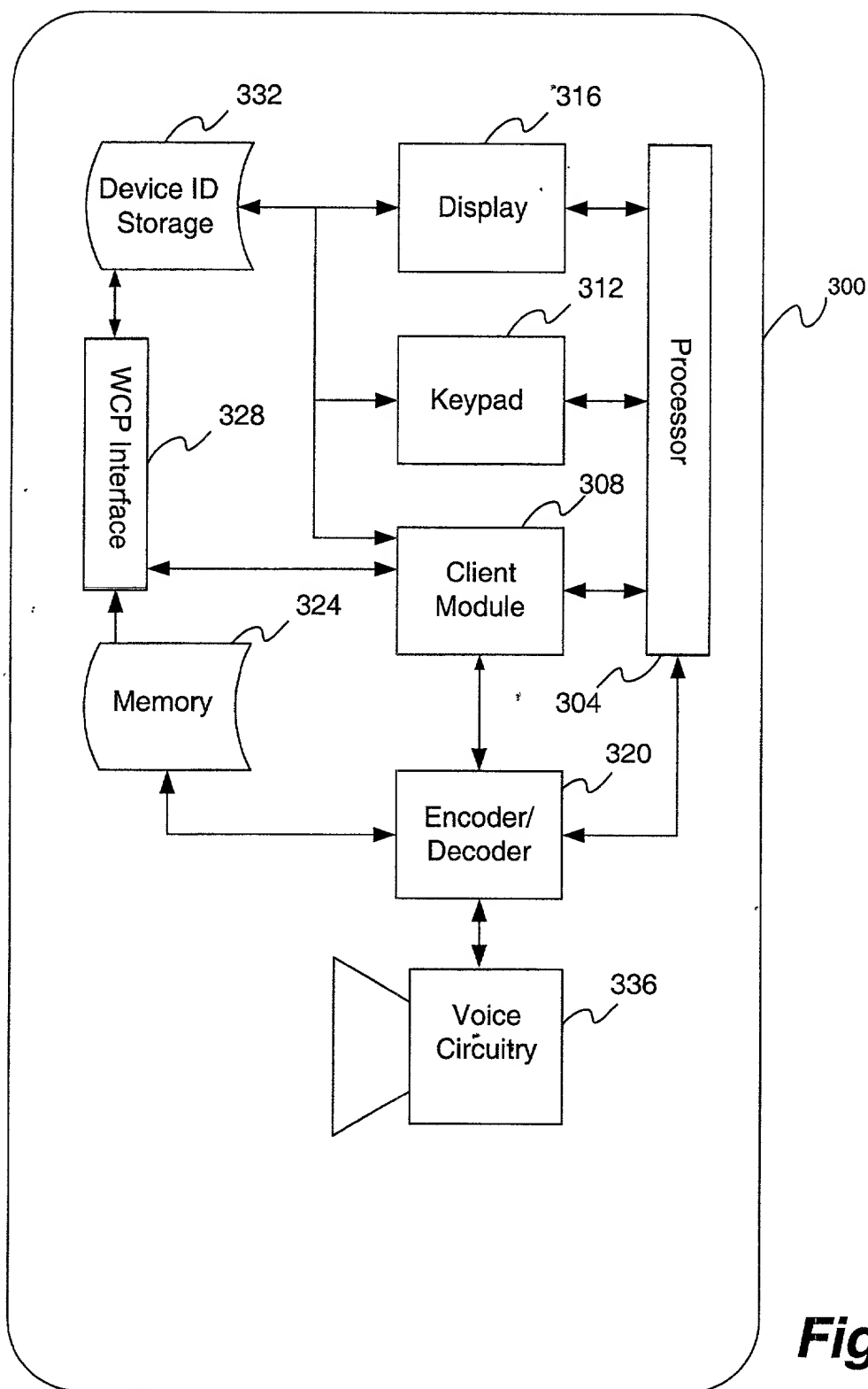
Figure 3

From: Mary Doe

`< d o e @ c o r p . c o m >` — 402

Subj: just missed you

Hi John,

Sorry I missed you, I'm at the Fremont
Hotel, let me know if you want to go to
dinner.

(650)817-1400

400

404 → LOCAL IDENTIFIER? == YES

406 → E-MAIL IDENTIFIER? == YES

408 → URI == NO

410 → PHONE NUMBER? == NO

412 → FAX NUMBER? == NO

Figure 4

START

502
SELECT MESSAGE FOR
CONTACT IDENTIFIER
ANALYSIS/PROCESSING

500

504
RETRIEVE TEMPLATES &
LOCAL INFORMATION

506
LOAD MESSAGE STRING
FOR ANALYSIS/
PROCESSING

LOCAL?
E-MAIL?
URI?
PHONE?
FACSIMILE?

508
X-IDENTIFIER
MATCH(s)?

YES

510
ACTIVATE INDICATOR(s)

NO

512
PERFORM
TASK?

NO

520
LOAD NEXT MESSAGE
STRING FOR ANALYSIS/
PROCESSING

YES

514
IDENTIFIER RELATED TASK

516
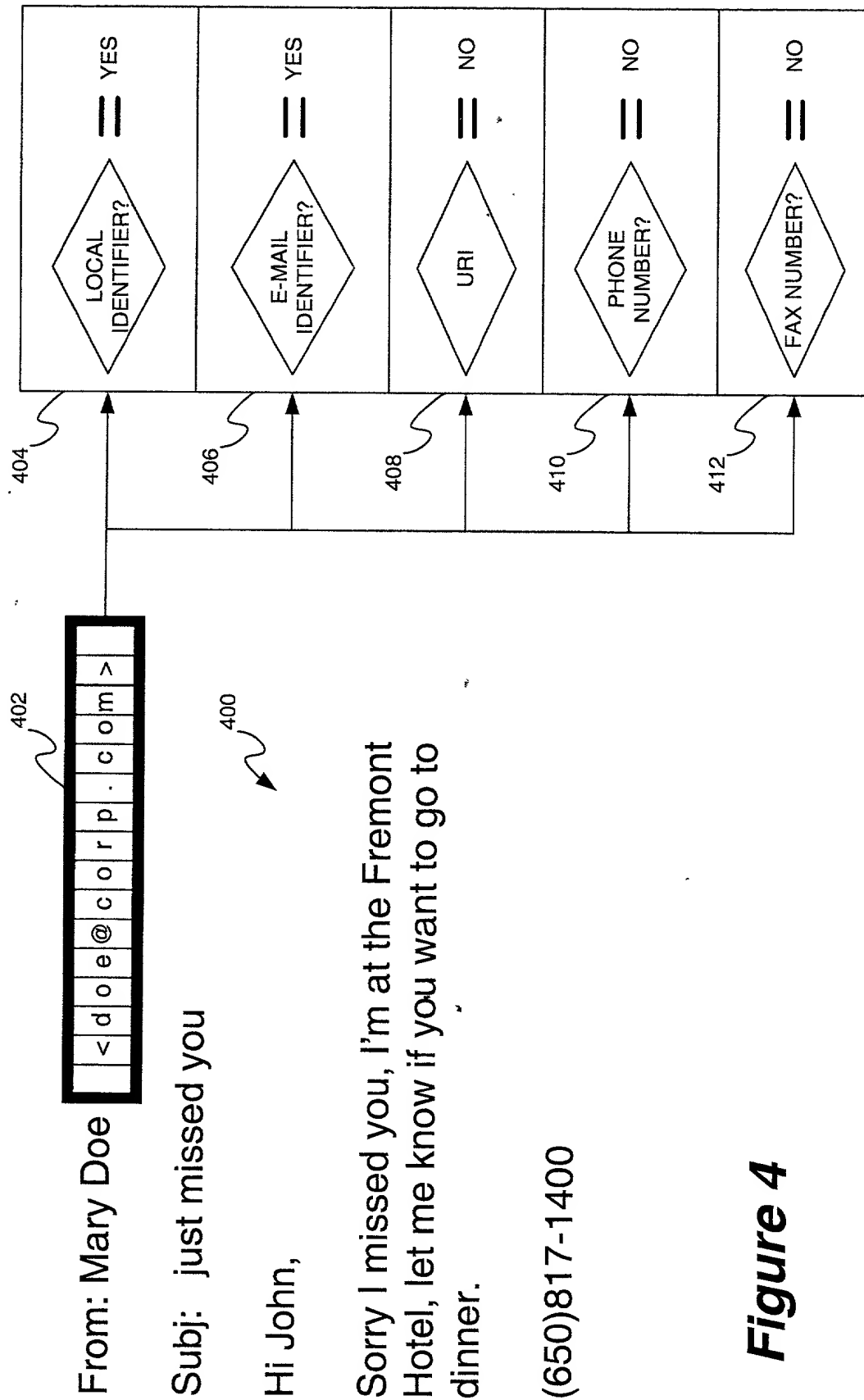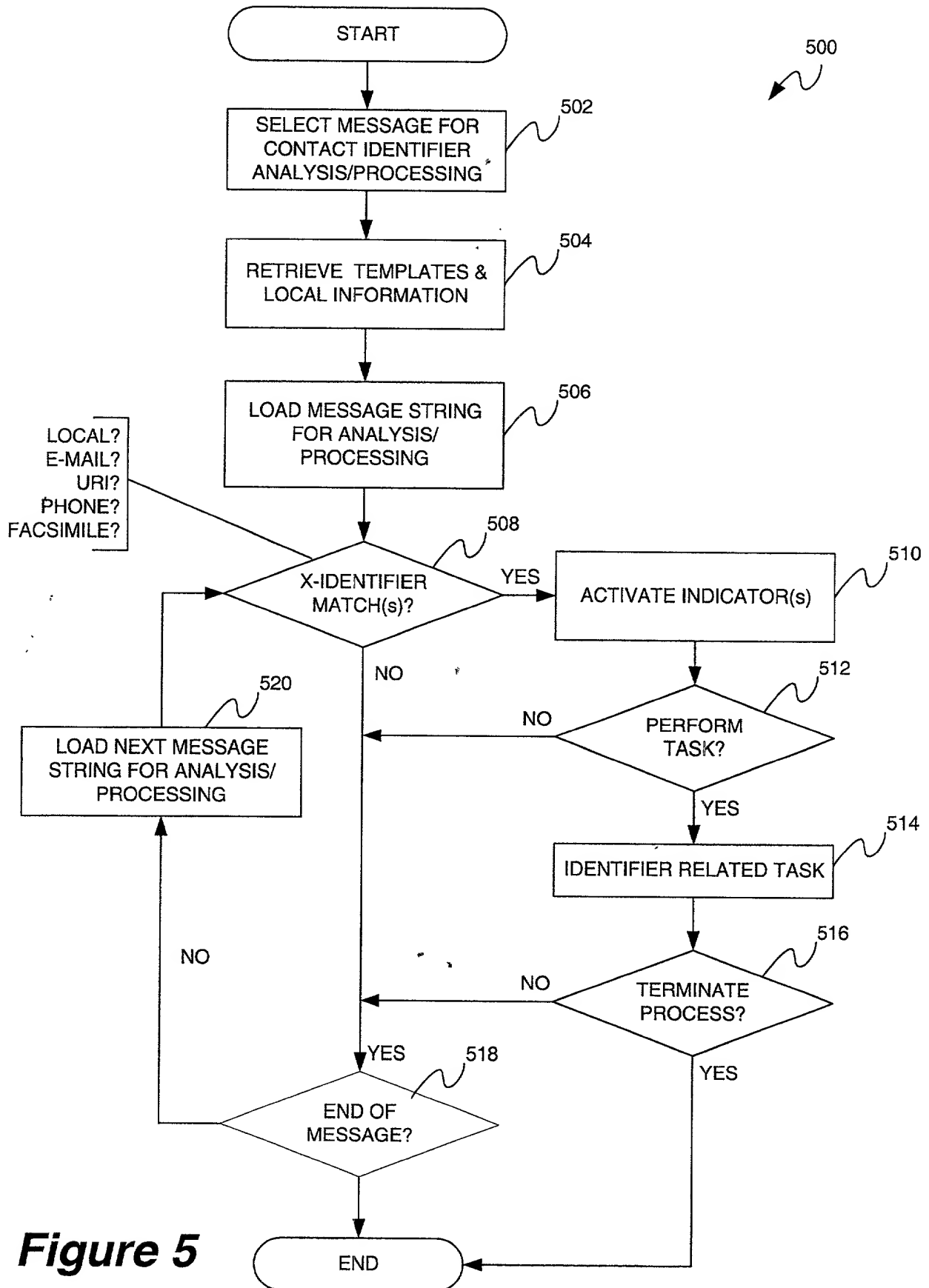TERMINATE
PROCESS?

NO

NO

YES

518
END OF
MESSAGE?

YES

Figure 5

END

DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below, next to my name.

I believe I am the original, first, and sole inventor (if only one name is listed below) or an original, first, and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

   Heuristicallly Assisted User Interface For A Wireless Communication Device

the specification of which

         X   is attached hereto.
         ___   was filed on _____ as
                     United States Application Number _____
                     or PCT International Application Number _____
                     and was amended on _____.
                                        (if applicable)

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claim(s), as amended by any amendment referred to above. I do not know and do not believe that the claimed invention was ever known or used in the United States of America before my invention thereof, or patented or described in any printed publication in any country before my invention thereof or more than one year prior to this application, that the same was not in public use or on sale in the United States of America more than one year prior to this application, and that the invention has not been patented or made the subject of an inventor's certificate issued before the date of this application in any country foreign to the United States of America on an application filed by me or my legal representatives or assigns more than twelve months (for a utility patent application) or six months (for a design patent application) prior to this application.

I acknowledge the duty to disclose all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56 (and reprinted in Appendix B).

I hereby claim foreign priority benefits under Title 35, United States Code, Section 119(a)-(d), of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s)

(Number)	(Country)	(Day/Month/Year Filed)	Yes	No
(Number)	(Country)	(Day/Month/Year Filed)	Yes	No
(Number)	(Country)	(Day/Month/Year Filed)	Yes	No

I hereby claim the benefit under title 35, United States Code, Section 119(e) of any United States provisional application(s) listed below:

___60/145,467___   ___July 23, 1999___
(Application Number)   Filing Date

_____   _____
(Application Number)   Filing Date

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, Section 112, I acknowledge the duty to disclose all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application:

		Pending
(Application Number)	Filing Date	(Status -- patented, pending, abandoned)
(Application Number)	Filing Date	(Status -- patented, pending, abandoned)

I hereby appoint the persons listed on Appendix A hereto (which is incorporated by reference and a part of this document) as my respective patent attorneys and patent agents, with full power of substitution and revocation, to prosecute this application and to transact all business in the Patent and Trademark Office connected herewith.

Send correspondence to:
   Dag Johansen
   (Name of Attorney or Agent)
STATTLER, JOHANSEN & ADELI LLP
P.O. Box 51860
Palo Alto, California 94303-0728

and direct telephone calls to
   Dag Johansen   **, at (650) 934 0470.**
      (Name of Attorney or Agent)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full Name of Sole/First Inventor__Craig William Payne__

Inventor's Signature _Craig William Payne_ Date _5/26/00_

Residence _Park City, Utah_ Citizenship _U.S.A._
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Full Name of Second/Joint Inventor__Paul A. Smethers__

Inventor's Signature _____ Date _____

Residence _Cupertino, California_ Citizenship _U.S.A._
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Full Name of Third/Joint Inventor _____

Inventor's Signature _____ Date _____

Residence _____ Citizenship _____
(City, State) (Country)

Post Office Address _____

Full Name of Fourth/Joint Inventor_____

Inventor's Signature _____ Date _____

Residence _____ Citizenship _____
(City, State) (Country)

Post Office Address _____

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APPENDIX A

Alan D. Minsk, (Reg. No. 35, 956) and Joe Zheng (Reg. No. 39,450) my attorneys for the Assignee Phone.com, Inc.; and Mani Adeli, Reg. No. 39,585; Dag H. Johansen, Reg. No. 36,172; John Stattler, Reg. No. 36,285, my patent attorneys, and James C. Mitchell, Reg. No. 40,094; my patent agent, of STATTLER, JOHANSEN & ADELI LLP, with offices located at 2672 Bayshore Parkway - Suite 304, Mountain View, California 94043, telephone (650) 934-0470, fax (650) 934-0475.

APPENDIX B

Title 37, Code of Federal Regulations, Section 1.56
Duty to Disclose Information Material to Patentability

(a) A patent by its very nature is affected with a public interest. The public interest is best served, and the most effective patent examination occurs when, at the time an application is being examined, the Office is aware of and evaluates the teachings of all information material to patentability. Each individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be-material to patentability as defined in this section. The duty to disclosure information exists with respect to each pending claim until the claim is cancelled or withdrawn from consideration, or the application becomes abandoned. Information material to the patentability of a claim that is cancelled or withdrawn from consideration need not be submitted if the information is not material to the patentability of any claim remaining under consideration in the application. There is no duty to submit information which is not material to the patentability of any existing claim. The duty to disclosure all information known to be material to patentability is deemed to be satisfied if all information known to be material to patentability of any claim issued in a patent was cited by the Office or submitted to the Office in the manner prescribed by §§1.97(b)-(d) and 1.98. However, no patent will be granted on an application in connection with which fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or intentional misconduct. The Office encourages applicants to carefully examine:

(1) Prior art cited in search reports of a foreign patent office in a counterpart application, and

(2) The closest information over which individuals associated with the filing or prosecution of a patent application believe any pending claim patentably defines, to make sure that any material information contained therein is disclosed to the Office.

(b) Under this section, information is material to patentability when it is not cumulative to information already of record or being made or record in the application, and

(1) It establishes, by itself or in combination with other information, a prima facie case of unpatentability of a claim; or

(2) It refutes, or is inconsistent with, a position the applicant takes in:

(i) Opposing an argument of unpatentability relied on by the Office, or

(ii) Asserting an argument of patentability.

A prima facie case of unpatentability is established when the information compels a conclusion that a claim is unpatentable under the preponderance of evidence, burden-of-proof standard, giving each term in the claim its broadest reasonable construction consistent with the specification, and before any consideration is given to evidence which may be submitted in an attempt to establish a contrary conclusion of patentability.

(c) Individuals associated with the filing or prosecution of a patent application within the meaning of this section are:

(1) Each inventor named in the application;

(2) Each attorney or agent who prepares or prosecutes the application; and

(3) Every other person who is substantively involved in the preparation or prosecution of the application and who is associated with the inventor, with the assignee or with anyone to whom there is an obligation to assign the application.

(d) Individuals other than the attorney, agent or inventor may comply with this section by disclosing information to the attorney, agent, or inventor.